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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 08/984,005 | 12/03/1997 | RANDY R. DUNTON | 42390.P5319 | 1674 |

7590 04/05/2005

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| EXAMINER |
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WILSON, JACQUELINE B

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| ART UNIT | PAPER NUMBER |
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2612

DATE MAILED: 04/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/984,005

Applicant(s)

DUNTON ET AL.

Examiner

Jacqueline Wilson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-11,13-19 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-11,13-19 and 21-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 01/13/05 have been fully considered but they are not persuasive. The applicant amended the independent claims to include the allowable subject matter claimed in cancelled Claim 20. However, as previously stated, Claim 20 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form **including all of the limitations of the base claim and any intervening claims**. By merely including the limitation of Claim 20 into the independent claims does not make the claims allowable. Therefore, please see new ground of rejections below.

*****NOTE: The majority of the claimed language states the broad limitation of "adapted to". This is interpreted as being "capable of" performing the task, but not necessarily doing it. As long as it could it capable, then it is performing the limitation.**

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-3, 5, 8-13, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ando (US 4,710,817).

Regarding Claim 1, Ando teaches an image processing circuitry (within each picture element, figs. 6 and 7) adapted to process digital pixel output signals produced by a digital imaging array (col. 3, lines 21+). Ando teaches that when a signal level exceeds a predetermined threshold, processing is performed on that signal by subtracting the threshold voltage from the output of the amplifier and sends that signal to an A/D converter and pulse counter (col. 6, lines 15+). The signals that fall below the predetermined threshold are output to a differentiating circuit (22). This reads on the limitation of processing saturated digital pixel output signals differently from non-saturated digital pixel output signals. Ando also teaches the image processing circuitry is "adapted to" sample the dark image in regions corresponding to the regions of saturated digital pixel output signals in an image of interest. Although not specifically disclosed, the circuitry need not perform sampling the dark image in regions corresponding to

the regions of saturated digital pixel output signals, however, it is capable of performing this limitation.

Regarding Claim 2, Ando teaches imaging array sensors (referred to as photosensors 8A), and the image processing circuitry being "adapted" to process saturated digital pixel output signals by subtracting an estimate of dark image fixed pattern noise for the imaging array sensors. Although not specifically disclosed, the circuitry need not perform the subtracting an estimate of the dark image fixed pattern noise, however, it is capable of performing this limitation.

Regarding Claim 3, Ando teaches imaging array sensors (referred to as photosensors 8A), and the image processing circuitry being "adapted" to process saturated digital pixel output signals by estimating the dark image fixed pattern noise by sampling from a dark image comprising stored digital pixel output signals. Although not specifically disclosed, the circuitry need not perform estimation of the dark image fixed pattern noise by sampling from a dark image, however, it is capable of performing this limitation.

Regarding Claim 5, Ando teaches the image processing circuitry is adapted for use with imaging array sensors comprising a CMOS sensor (indicated as photodiodes; see abstract).

Regarding Claim 8, Ando teaches the image processing circuitry is "adapted to" detect regions of saturated digital pixel output signals in an image of interest. Although not specifically disclosed, the circuitry need not perform detecting regions of saturated digital pixel output signals, however, it is capable of performing this limitation.

Claim 9 is analyzed and discussed with respect to Claim 1. (See rejection of Claim 1 above.)

Claim 10 is analyzed and discussed with respect to Claim 2. (See rejection of Claim 2 above.)

Claim 11 is analyzed and discussed with respect to Claim 3. (See rejection of Claim 3 above.)

Claim 13 is analyzed and discussed with respect to Claim 5. (See rejection of Claim 5 above.)

Claim 16 is analyzed and discussed with respect to Claim 8. (See rejection of Claim 8 above.)

3. Claims 17 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Rambaldi et al (US 6,618,084).

Regarding Claim 17, Rambaldi et al teaches after a pixel is reset, the pixel may be sampled at a later time to determine whether its voltage has deviated from that of a dark state (col. 7, lines 5+). If, upon sampling the reset pixel, it is found that the pixel voltage deviates from that associated with this dark state, the pixel may be deemed faulty (i.e. dark pixels; col. 7, lines 40+) by the processing circuit (24), in which the pixel is corrected or masked (faulty pixels being partially or fully corrupt col. 8, lines 1+). Rambaldi et al further discloses that if the pixel is deemed to be partially corrupted, the system next determines whether the pixel is saturated (col. 11, lines 32+). If so, the saturated partially corrupted pixel is treated like a completely corrupted pixel, therefore processing the pixel signal differently than the non-saturated pixel signal by masking the output by an interpolated output taken from surrounding pixels. This reads on the limitation of processing saturated digital pixel outputs differently from non-

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saturated digital pixel output signals including sampling a dark image in regions corresponding to the regions of saturated digital pixel output signals (see also fig. 4C).

Regarding Claim 24, Rambaldi et al teaches detecting regions of saturated digital pixel output signals in an image of interest by determining which pixels are faulty for determined different ways to process the pixels, as discussed in Claim 17.

Claim Rejections - 35 U.S.C. § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6, 7, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando'817 in further view of the applicants conceded prior art.

Regarding Claims 6 and 7, Ando'817 fails to specifically teach the image processing circuitry comprises dark fixed pattern noise reduction circuitry. However, the applicants conceded prior art teaches that it is well known in the art to further use a memory such that "dark image" output from the sensor may be read into the memory preventing further exposure to light and then subtracting the stored dark image from the image of interest for correcting fixed pattern noise. The applicant teaches that this technique is used in digital signal format. Although disadvantages are taught, the method of using dark fixed pattern noise circuitry is notoriously

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well known in the art. Therefore, it would have been obvious to one having ordinary skill in the art to further include dark fixed pattern noise reduction circuitry.

Claims 14 and 15 are analyzed and discussed with respect to Claims 6 and 7. (See rejection of Claims 6 and 7 above.)

6. Claims 18, 19, and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rambaldi et al (US 6,618,084) in view of the applicants conceded prior art.

Regarding Claim 18, Rambaldi et al fails to specifically teach the estimating a dark fixed pattern noise for the imaging array sensors wherein processing saturated digital pixel output signals differently includes subtracting an estimate of the dark image fixed pattern noise for the imaging array sensors. However, the applicants conceded prior art teaches that it is well known in the art to further use a memory such that "dark image" output from the sensor may be read into the memory preventing further exposure to light and then subtracting the stored dark image from the image of interest for correcting fixed pattern noise. The applicant teaches that this technique is used in digital signal format. Although disadvantages are taught, the method of using dark fixed pattern noise circuitry is notoriously well known in the art. Therefore, it would have been obvious to one having ordinary skill in the art to further include estimating a dark fixed pattern noise for the imaging array sensors wherein processing saturated digital pixel output signals differently includes subtracting an estimate of the dark image fixed pattern noise for the imaging array sensors

Claim 19 is analyzed and discussed with respect to Claim 6. (See rejection of Claim 6 above.)

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Regarding Claim 21, Rambaldi et al teaches the imaging array sensors comprise a CMOS sensor (col. 4, lines 48-62).

Claims 22 and 23 are analyzed and discussed with respect to Claim 6. (See rejection of Claim 6 above.)

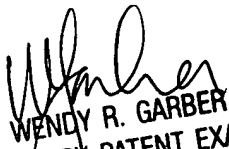
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jacqueline Wilson whose telephone number is (571) 272-7322. The examiner can normally be reached on 8:30am-5:00pm (alternate Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (571) 272-7308. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JW
03/23/05


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